USDA NRCS
Natural Resources Conservation Service

Conservation Management System (Animal Waste)

Alabama Guide Sheet No. AL 6

What is a Conservation Management System*?

A Conservation Management System for animal waste consists combinations of conservation practices and waste management practices that allows for the storage, transfer, and application of animal by-products in a way that meets the landowner's/user's objectives while protects the natural resources involved and the environment on and off the farm. These Conservation Management Systems vary depending on type of waste, type of storage, method of transfer, and crop/forage on which the wastes are applied.

Resource Concerns Related to Storage, Treatment, and Application of Animal Waste

Resource concerns related to handling animal waste include soil contamination; groundwater or surface water contamination; plant productivity, health and vigor; and animal health and safety.

Soil Contamination

Excessive application of animal by-products can result in the burning of crops or the buildup of nutrient levels that can be toxic to plants.

Groundwater and Surface Water Contamination

Improperly stored or applied animal by-products can result in nutrients and pathogens leaching into the groundwater or being transported by runoff into surface water bodies.

Plant Productivity, Health, and Vigor

Excessive application of animal by-products can result in burning of the plant leaf surface or a build-up of nutrients that might be toxic to the plant. Application of nutrients to meet plant needs as indicated by soil test will result in optimum plant productivity.

Animal Health and Safety

Proper management of animals and their by-products protects the animals from diseases, forage toxicities, and poor quality water supplies that might reduce their production.

Essential Practices

The essential practices to all confined conservation management systems for animal waste are those related to waste and nutrient management. Waste management practices are described below. Nutrient management is the proper timing and application of animal by-products based on crop needs, soil and weather conditions.

---

* Conservation Management System is also referred to as a Resource Management System in the National Planning Procedures Handbook.

Confined Animal Feeding Operation Conservation Management Systems

Confined animal feeding operations do not cover large acreage of land; however, large confined operations can produce as much waste as small cities. Therefore the waste must be managed in an environmentally safe manner, which often means spreading the waste over a much larger acreage as fertilizer. There are three main steps in the waste management process—storage, treatment, and distribution on the land. The following waste management systems are typical of the animal types described.

Liquid Waste Management

Waste from dairy, swine, and poultry confined animal feeding operations are usually scraped, washed or flushed into an earthen storage facility, that is designed as either a lagoon or holding pond. A lagoon is designed to store and treat the liquid waste over a long period of time, allowing for biological processes to reduce the amount of nutrients and odor of the waste. A holding pond is designed to store the waste for a short time a smaller reduction in nutrients. A holding pond will be smaller than a lagoon for the same size confined animal feeding operation, but the holding pond will usually require more acreage for land application of the waste. Both of these storage systems must have a portion of the waste removed on a regular basis to minimize the risk of overflow during wet weather. Tank wagons and irrigation systems are designed to transport the waste from the storage facility to the field. An irrigation system is the most efficient method of distribution. Regardless of the method of distribution, the waste must be land applied at a safe rate to reduce the risk of contamination to groundwater or run-off into streams, ponds, wetlands, etc. Waste should be applied according to soil test or the phosphorus index.

Dry Waste or Litter

The majority of waste in Alabama is stored and handled as dry or semisolid waste. The waste may be scraped frequently and handled in a semisolid state, as in a dairy, or may be stored in floor bedding material and cleaned out annually, as with broiler litter. In either case the animal by-products are land applied for plant nutrients or, in some cases, fed to livestock. The waste or litter is often taken directly from the animal facility to the field, but in some cases the waste is temporarily stored until weather and crop conditions allow the waste to be spread at recommended rates. Litter can also be stored temporarily in the field and covered by plastic or other water-proof covering, or be stored in a special “dry stack” barn. Storage does reduce the amount of nitrogen in the litter due to volatilization. Whether stored or spread directly from the animal facility, the waste must be spread on the land according to best management practices, which will include soil testing and the phosphorus index. Mortality is usually managed by using incinerators, small animal composters, or freezers and a renderer.

Other associated practices to these systems might be guttering of buildings, constructed wetlands, diversions, filter strips, fencing, and others based on specific site conditions.

Potential Effects of Conservation Management Systems on Animal Waste

- Reduces nutrients and pathogens from entering groundwater
- Reduces nutrients and pathogens in surface runoff to water bodies
- Reduces odors
- Reduces soil contamination of excessive nutrients
- Reduces plant related toxicities to animals
- Improved water quality for livestock

References

Other Alabama Guide Sheets related to this Conservation Management System are: AL 312, 313, 313A, 313B, 313C, 317, 317A, 317B, 359, 633A, 634, 656, 749, 769.

10/2001